



National Aeronautics and
Space Administration

Washington, D.C.
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Reply to Attn of

NXG

TO: Distribution

FROM: N/Associate Administrator for Management
Q/Associate Administrator for Safety
and Mission Quality

SUBJECT: NASA Policy on Use of Chlorofluorocarbon (CFC) and
Halon Compounds

This letter presents background information and establishes NASA Interim Policy on use of CFCs and Halons, in response to United States treaty obligations to help protect stratospheric ozone. A NASA Management Instruction is planned for preparation next year, after NASA consumption requirements have been defined and new regulatory requirements devolving from expected revisions to the Montreal Protocol and Clean Air Act are known.

Background

In 1987, the United States ratified the "Montreal Protocol on Substances that Deplete the Ozone Layer." That treaty calls for reduced production and eventual phase-out of specific compounds responsible for depletion of stratospheric ozone. In order to assess potential impacts on NASA, the Propellants Consumables Management Office (SI-PMS) at Kennedy Space Center (KSC) surveyed NASA Centers to determine the extent of NASA consumption of CFCs and Halons and to identify measures which have been taken to minimize their consumption. Total NASA-wide consumption in calendar year 1988 was nearly 2 million pounds at a cost exceeding \$1.5 million. Without controls, usage will increase with additional shuttle operations. Except for a few operations, control measures have not been widely applied.

In August 1988, the EPA implemented the treaty by announcing new regulations limiting the production of certain CFCs and Halons. Production of five specific CFC compounds (CFC-11, CFC-12, CFC-113, CFC-114, and CFC-115) will be frozen at 1986 production levels by 1992. This freeze will be followed in mid-1993 by a 20-percent reduction from the 1986 levels and in mid-1998 by a 50-percent reduction from the 1986 levels. The rules also prohibit production of three Halon compounds (1211, 1301, and 2402) from exceeding 1986 levels beginning in 1992. Note that in contrast to the usual approach of regulating the use of a substance, in this case the supply is being controlled. As a result of increased environmental awareness since the signing of the protocol, major domestic CFC and Halon manufacturers have already begun voluntary actions to phase down with the intention

of stopping production of CFCs and Halons long before treaty cutoff dates. More recently, a new excise tax on CFCs and Halons essentially doubled their price in 1990 with further significant increases through 1999. This tax may eventually price these chemicals out of the market, irrespective of the regulatory requirements. Also, extensions of restrictions to phase-out of other compounds such as methylchloroform and carbon tetrachloride have been proposed.

These actions make reduction of current consumption and management of the existing CFC and Halon supplies crucial and will necessitate eventual conversion to alternative chemicals.

Policy

The interim NASA policy on continued CFC and Halon consumption is as follows:

1. Planning and preparation for phase-out of the previously-listed CFCs and Halons shall begin immediately, with a goal of eliminating NASA consumption of these chemicals in all but critical applications by 1995. For purposes of this policy, critical applications are defined as those that are both mission essential and that have no currently proven and available market alternative.
2. The KSC Propellants Consumables Management Office (SI-PMS) will continue to monitor NASA-wide CFC and Halon consumption to ensure planned reductions are being met and to maintain a centralized listing of critical applications. Center environmental coordinators will be the focal point for gathering this data. The Propellants Consumables Management Office will also manage a communication network to provide the Centers with information on legislative changes, usage reduction efforts, substitution testing activities, and other relevant information.
3. Each NASA Center shall establish plans to meet or exceed the 1995 scheduled reduction and phase-out of CFCs and Halons. Consumption by on-site contractors shall be included in the plan. Individual plans shall:
 - (a) identify critical versus discretionary uses both by NASA and in work performed for NASA.
 - (b) determine the quickest practical phase-out of discretionary uses of Halons and CFC.
 - (c) prioritize the use of projected supplies and reserves for critical applications until substitutes are available.

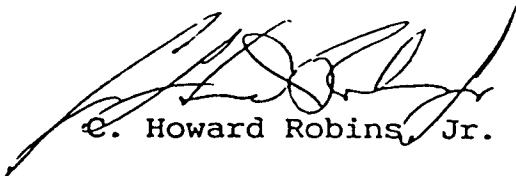
(d) identify equipment, resources, technology, and training required to accomplish the 1995 goal.

(e) identify institutional constraints and other problems which prevent or impede the phase-out of CFCs and Halons by NASA and on programs performed for NASA, e.g., specifications and standards.

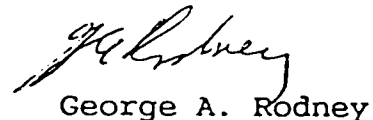
4. Using plans prepared at each Center, the Headquarters Facilities Engineering Office (NX) will develop an integrated NASA plan and monitor its implementation in coordination with the Office of Safety and Mission Quality (Q) and the KSC Propellants Consumables Management Office (SI-PMS). Center plans, including satellite installations, shall be submitted to the Facilities Engineering Office (NX), NASA Headquarters, by March 1, 1991. Annual updates shall be submitted each following March.
5. Expansion of any existing NASA application or any new application using regulated CFCs or Halons must be approved by NASA Headquarters. Requests for approval shall be submitted via the Institutional Program Office to the Office of Facilities Engineering (NX), who will coordinate with the Office for Safety and Mission Quality (Q).
6. Existing closed CFC systems may continue to receive routine maintenance from available supplies for the system's design life. Replacement substitutes shall be considered for earliest possible introduction where system performance and cost of substitutions are acceptable. Once design life is achieved, replacement systems will be designed using only acceptable substitutes. R-22 is currently an acceptable substitute for use in central chiller plants. Most large central chillers have used R-12, in the past; and at the present time, there is no known drop-in substitute. Use of R-22 requires the complete replacement of compressor assemblies. Each Center should acquire the capability for recycling R-12 refrigerants so as to delay the need for compressor replacement for as long as possible. Any new installation of central chiller plants with equipment using one of the listed refrigerants will require approval as described in paragraph 5.
7. Existing CFC and Halon systems shall be closely monitored for discharges and leaks. When CFCs and Halons are used, procedures shall be used to avoid or minimize discharge.

8. The cleaning solvent CFC-113 represents NASA's single most significant source of releases to the atmosphere. Substitutes shall be identified and used wherever possible. Vapor recovery and reclamation shall be implemented where continued usage is a requirement. Any decision to forego vapor recovery and reclamation will require approval as described in paragraph 5.
9. New contracts which may require the procurement or use of CFCs, even if off-site, shall specify that such usage shall conform with this policy.
10. NASA will actively participate and support government and industry research and development efforts to identify and qualify CFC and Halon replacements that have NASA application.
11. NASA Centers shall institute an awareness effort directed to users, contractors, logistic, and procurement personnel emphasizing the need to reduce and control CFC's and Halons and to plan for eventual nonavailability of CFCs and Halons.

Further guidelines may be issued by the Facilities Engineering Office as regulatory requirements, potential problems, and impacts to NASA become more clearly defined. Where revision of existing NASA standards and policies are required by this guidance, they will be initiated by the responsible office.



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